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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,351	02/14/2006	Takamitsu Asanuma	126251	3369
25944 7590 01/09/2008 OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850				
			EXAMINER EDWARDS, LOREN C	
			ART UNIT 3748	PAPER NUMBER
			MAIL DATE 01/09/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/568,351

Applicant(s)

ASANUMA, TAKAMITSU

Examiner

Loren C. Edwards

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-9 is/are rejected.
- 7) ☒ Claim(s) 5 and 10 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>2/14/06</u> 2/14/06 | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 2/14/06 in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner has considered the information disclosure statement.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-4, and 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishioka et al. (U.S. 6,698,187) in view of Tamura et al. (U.S. 6,532,733).

Nishioka discloses an exhaust gas control apparatus for an internal combustion engine

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characterized by comprising: an exhaust catalyst (Nishioka; Fig. 1, Nos. 14 and 15) disposed in an exhaust passage of the internal combustion engine; a concentration detection unit (Nishioka; Fig. 1, Nos. 17-19) that is capable of detecting a total concentration of a sulfur oxide in an exhaust gas that passes through the exhaust catalyst, and detecting a concentration of the sulfur oxide (Nishioka; Fig. 6); and a sulfur concentration estimation unit that estimates a sulfur concentration of fuel based on a detection value of the concentration detection unit (Nishioka; Col. 12, Line – 62 – Col. 13, Line 5) when it is determined that the exhaust gas is at one of a stoichiometric and rich air/fuel ratio (Nishioka; Fig. 3, Step 55; Figures 4 and 5). Nishioka fails to specifically discuss a concentration detection unit that is capable of detecting a hydrogen sulfide. Tamura discloses a plasma exhaust gas treatment device that teaches to sense hydrogen sulfide in the exhaust stream of an internal combustion engine (Tamura; Col. 6, Lines 13-24). It would have been obvious to one having ordinary skill in the art at the time the invention was made to place the exhaust gas treatment device of Tamura in the exhaust system of Nishioka for the advantage of increased emissions control (Tamura; col. 5, Lines 25-46).

6. With regards to claim 2, the modified Nishioka discloses the apparatus of claim 1, as described above, and further comprising an air/fuel ratio control unit that controls the air/fuel ratio of the exhaust gas into one of the stoichiometric state and the rich state (Nishioka; Col. 4, Lines 1-12).

7. With regards to claim 3, the modified Nishioka discloses the apparatus of claim 2, as described above, and further wherein the air/fuel ratio control unit executes a rich

spike control (Nishioka; Col. 4, Lines 1-18) in which the air/fuel ratio of the exhaust gas is temporarily brought into the rich state at a predetermined cycle, and the air/fuel ratio control unit comprises a rich amount increase unit that executes at least one of a control for holding the air/fuel ratio of the exhaust gas in the rich state for a longer time than a time under the rich spike control (Nishioka; Fig. 4, Step 25), and a control for bringing the air/fuel ratio of the exhaust gas into a richer state than a state under the rich spike control.

8. With regards to claim 4, the modified Nishioka discloses the apparatus of claim 2, as described above, and further wherein the exhaust catalyst comprises a NOx catalyst of occlusion and reducing type (Nishioka; Fig. 1, No. 15), a NOx occluded amount estimation unit is provided for estimating an amount of NOx that has been occluded in the NOx catalyst (Col. 4, Lines 13-18), and the air/fuel ratio control unit controls the air/fuel ratio of the exhaust gas into one of the stoichiometric state and the rich state when the NOx occluded amount estimated by the NOx occluded amount estimation unit is determined to be equal to or larger than a predetermined amount (Col. 4, Lines 1-18).

9. With regards to claims 6-9, the modified Nishioka discloses the apparatus of claims 1-4, as described above, which contain all of the essential claim elements of the instant claims. The method to so perform is inherently included.

Allowable Subject Matter

10. Claims 5 and 10 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Loren C. Edwards whose telephone number is (571) 272-2756. The examiner can normally be reached on M-TH 5:30-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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